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ABSTRACT

Using actual purchase data of food products with different labels, we examine Dutch consumers' purchases of organic, fair-trade and health labels. Empirically, consumers' purchase behavior of labeled products can be categorized into two dimensions: a health-related and a sustainable dimension comprising the purchase of organic and fair-trade products. Using latent class analysis, we find four segments that differ in their purchase behavior of the studied labels. While one segment comprising the majority of consumers mainly purchases conventional products, a somewhat smaller segment purchases products with health labels. A third segment containing approximately 10% of consumers purchases products with both health and sustainable labels; these consumers tend to consider the future consequences of their behavior and have higher biospheric values. The fourth segment is also small, purchases sustainable labels, has strong biospheric values, and largely considers the future consequences of current behavior; it is also less price-conscious.

INTRODUCTION

Today's societies face many challenges related to consumption. The consequences of environmental pollution, global warming, and the excessive use of natural resources are becoming increasingly more obvious and are extensively covered in the media (Gore 2006). Third-world issues and the promotion of "fairly" traded goods have also attracted attention , and there is broad discussion about the effects of rising obesity levels and poor diets for both individual consumers and overall social welfare (Food Market Watch 2008). In light of increased media attention, it has become a social imperative for companies and consumers to consider these trends. Some firms such as Unilever have embraced the trend of caring for the well-being of the planet and consumers (Ignatius 2012).

Several literature streams, including marketing, consumer research, (environmental) psychology, food science, and agricultural economics (e.g., Joireman et al. 2001; Verhoef 2005;Ngobo 2011; van Doorn and Verhoef 2015), have investigated purchase behavior of products with sustainable[1] and health labels; however, research on buying behavior regarding these products, such as organic and fair trade, is limited, even though these products share some relevant similarities. First, products with both sustainable and health labels are typically priced higher than their conventional, unlabeled counterparts. Therefore, buying these products comes at a cost. Importantly, consumers may also need to sacrifice specific benefits in the short run,

[1] We define "sustainable development" in accordance with the Brundtland Commission as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development 1987). This entails production and consumption that finds a balance between the 3 Ps—people, the planet, and profits (Bergmans 2006). Under this definition, products with both organic and fair-trade labels can be considered sustainable labels. For a more extensive discussion on organic labels, see Gleim et al. (2013).. Although the sustainable nature of many of these labels can be debated, providing an extensive discussion on sustainability is beyond the scope of this article. Smoking organically produced cigarettes could be considered sustainable in some way, but doing so is not healthful for the individual. Similarly, eating organic food can be sustainable, but when the food is produced in Southern Europe and consumed in Northern Europe, non-sustainable consequences (e.g., distribution) also exist.

such as quality and taste (van Doorn and Verhoef 2011). Second, both types of products promise long-term benefits, such as better health or better living conditions for people, animals, and future generations. Consumers must therefore trade off the short- and long-term benefits and costs of the consumption of these products. An important research question is whether consumers make similar trade-offs between the short- and long-term benefits and costs of these different labels. For example, do inter-temporal benefits play a similar role in the purchase behavior of health labels as well as organic and fair-trade labels?

In this study, we segment consumers according to their actual buying behavior of organic, fair-trade, and health labels using an extensive data set[2]. We use latent class analysis in which we simultaneously include important psychographic and socio-demographic variables as co-variates to describe the derived segments. Using this segmentation study, we can shed more light on the effect of different inter-temporal benefits and costs of these labels on consumers' buying decisions. We also aim to delineate the relationship between specific labels and to determine whether consumers perceive these labels as distinct from ordinary products.

[2] This study uses the same data as those in van Doorn and Verhoef (2015). However, these studies differ from each other in two ways. First, van Doorn and Verhoef (2015) focus on the drivers of the purchase behavior of organic products solely, whereas this study also includes fair-trade and health labels. Second, van Doorn and Verhoef (2015) focus on the theoretical drivers of purchase behavior of organic labels, while this study mainly explores the presence and description of consumer segments.

PURCHASE BEHAVIOR OF PRODUCTS WITH DIFFERENT LABELS

Organic, Fair-Trade, and Health Labels

In this study, we focus on organic, fair-trade, and health labels. Organic labels (i.e., EKO, BIO) indicate that products are more environmentally sustainable, as they are produced in a more animal-friendly way, use less or no pesticides, and so on. Environmentally friendly motives are important for consumers who buy these products. However, these labels may also be of high quality and have health benefits because of, for example, less use of pesticides. Quality benefits, however, are not as straightforward (van Doorn and Verhoef 2011). Typically, organic products are priced higher than their non-labeled counterparts (Bezwada and Pauwels 2013), and a large discrepancy exists between the price consumers are willing to pay for these products and the actual price (van Doorn and Verhoef 2011).

Fair-trade labels signal to consumers that products are produced in a socially sustainable way and thus focus on the role of people in the production process. Buying fair trade typically means paying a fair price to local farmers in third-world countries for products such as coffee, chocolate, bananas, and rice. Similar to organic products, fair-trade products, which are produced in third-world countries and exported to the West, are typically higher priced. Notably, researchers have mainly focused on understanding the buying behavior of organic products while neglecting fair-trade products. Both labels share a sustainable focus, though they differ on orientation: planet versus people. Tully and Winer (2014) show that consumers are willing to pay a higher price for fair-trade than organic products.

Importantly, some organic and fair-trade labels appear in a less prominent spot on the package . In this study, we examine the Marine Steward Council (MSC) certificate

(environmentally friendly fishing production) and UTZ-certified (social label for production of chocolate and coffee) labels.

Health labels center on health consequences of specific food products and involve claims such as light and low-fat and the addition of specific nutrients (e.g., added protein or calcium). Compared with the other two labels, health labels focus more on the well-being of the individual consumer or household instead of the environment and the well-being of other consumers. However, consumer research has shown that products with health claims induce more consumption (e.g., Wansink and Chandon 2006). Compared with the other labels, firms have more actively pursued health label strategies to differentiate themselves from the competition, and many brands have been created to market these healthy products (i.e., Yakult). Typically, products with health labels are also higher priced.

All three types of labels differentiate the products from other brands and promote specific, more long-term benefits to consumers. Although the focus of their claims differs, they have some similar underlying motives for buying these products (i.e., increased health for both organic and health labels). In this research, we investigate the presence of different consumer segments in terms of their buying behavior of these products, which helps us determine whether these labels serve similar or different consumer groups.

Consumer Segments and Their Purchase Behavior

From an extensive review of the literature on consumer purchase behavior of sustainable and health products, we include several descriptors of potential consumer segments in our study. Specifically, we include psychographic variables, values, and socio-demographic variables as descriptors. First, for the psychographic variables, we include the consideration of future

consequences (CFC) (Strathman, Gleicher, Boninger, and Edwards 1994; Joireman et al. 2001), quality and price consciousness (Bezawada and Pauwels 2013; van Doorn and Verhoef 2015), and health motivation (Verhoef 2005). Second, researchers in the context of sustainable behavior typically distinguish among three general values: egoistic, altruistic, and biospheric values. An egoistic value orientation implies that people try to maximize their own individual outcomes, while collective values pertain to the welfare of other people (altruistic values) or the natural environment (biospheric values) (Stern, Dietz, and Kalof 1993). Third, we include gender, age, education, income, and household size as socio-demographic variables that affect consumers' buying behavior of organic, fair-trade, and health labels. Prior research confirms that consumer segments may differ on these variables in their buying behavior (e.g., Verbeke 2005).

RESEARCH METHODOLOGY

Research Setting

We investigate the Dutch food market using a wide array of labels and claims, such as product claims (e.g., light) and specific branded labels (e.g., fair trade, EKO). These claims are related to the content of the product or specific production methods (e.g., organic production). The selection of the included food claims was based on two expert meetings with experts from the food industry (e.g., category managers, brand managers) and experts on sustainability (i.e., experts from the Dutch food policy board). Health claims included reduced fat or zero-fat claims, nutrition claims (e.g., extra vitamins), or health (e.g., lowers cholesterol) and "healthy choice"

claims[3]. The organic and fair-trade claims included organic, fair trade and UTZ certified, free-range eggs, and fish certified by the MSC.

Data Collection

Data came from the Dutch GfK household panel, in which approximately 5,000 Dutch households scan all their food purchases using in-home scanning devices. We collected purchase data in 29 categories, such as fruit and vegetables, meat, coffee, cereals, and dairy products. The selected food categories represent approximately 80% of all food purchases of Dutch households. We screened more than 100,000 stock-keeping units to establish which of the purchased items contain which food claims. The data we use span two periods of 20 weeks (November 2007–March 2008 and November 2008–March 2009). We have data on the purchasing behavior of 4,023 panel members in the first period and 4,412 members in the second period.

Measurement of Purchase Behavior

We use the share of wallet (SOW) per label as our main segmentation variable. We define the SOW of label *l* for household *i* in period *t* as follows:

$$SOW_{i,l,t} = \frac{Sales_{i.l,t}}{Sales_{i,t}} \cdot$$

Thus, for each household *i* we calculate the percentage of the household budget spent on claim *l* in period *t*. As Table 1 shows, health labels are purchased more frequently than organic and fair-trade labels, though the SOW of the health labels decreased from the first period of observation

[3] The healthy choice label was initiated by the Dutch Food Center and indicates which food products are more healthful (e.g., lower fat, less sugar) in a category (for more information, see http://www.voedingscentrum.nl/encyclopedie/Vinkje.aspx).

to the second period ($p < .01$). The SOW of zero-fat products also decreases over time ($p < .01$), while a greater part of the household budget is spent on products with a nutrition or health claim ($p < .01$). We also examined the share of the studied labels in the shopping basket rather than the share of purchases of these labels to rule out any effects merely due to price increases. The descriptive findings remained stable.

- Table 1 around here -

Measurement of Covariates

We administered the questionnaire measuring attitudes and values in two waves six months apart (November 2007 and May 2008). To adhere to restrictions of our data provider, we administered the questionnaire to only part of the panel. In the first wave, we obtained responses of 759 panel members, and in the second wave, we received 1,224 responses. Some respondents (N = 630) took part in both survey waves; we did this to test whether their attitudes and values changed over time (which was not the case). We therefore decided to merge the attitudinal data from both waves to maximize our sample size. We obtained 1,353 usable responses. For 1,043 of the respondents, we have behavioral data for the first period of observation, and for 1,198 of the respondents, we have behavioral data for the second period. Health motivation, price, and quality consciousness were measured in GfK's yearly panelist survey; we used the data gathered in 2008.

Appendix A reports the specific items, Cronbach's alphas, and the averages of the scales; most alphas exceed the critical threshold of .7 (Nunnally and Bernstein 1994). However, in wave 1 only, CFC has a lower alpha (.63). For our analyses, we use the average of the items.

Data on socio-demographics are available in the panel and thus were not collected separately for this project. Appendix B shows the descriptive statistics of our sample for age,

education, income, and household size, and Appendix C reports the correlation matrices of the variables included in our study.

RESULTS

Our analysis includes three steps[4]. First, we use both an exploratory and a confirmatory factor analysis to observe underlying dimensions with respect to consumers' purchase behavior of the considered labels. Second, we execute a latent class analysis to segment consumers and determine the number of segments (Wedel and Kamakura 1999). Third, we interpret the segments according to purchase behavior and the scores on the included descriptors or profiling variables.

Underlying Dimensions of the Purchase Behavior of Labeled Products

Our analysis suggests a two-factor solution. Table 2 displays the component loadings for both years of observation. All health-related labels load on one factor, suggesting the presence of a health label factor. Only the SOWs for the organic and fair-trade labels and free range eggs show high factor loadings on the second factor. This indicates that consumers buying more organic labels also tend to buy more fair-trade labels, suggesting an underlying sustainable dimension.

The SOWs for UTZ-certified purchases and products certified by the MSC do not have high loadings on either of the two factors. An explanation for this result is that both certification labels were added to existing products; that is, consumers might not deliberately choose fish with an MSC label or UTZ-certified coffee but buy the products they always buy, which now happen to have MSC or UTZ labels. As a consequence, these labels are not considered specific labels

[4] We do not provide complete statistical details of our analysis. Interested readers may contact us for the full results.

differentiating these products from conventional products. We therefore decided not to include these labels in the confirmatory factor analysis. The results of the analysis fully confirm the results of the first exploratory analysis in both years 1 and 2.

- Table 2 around here -

Number of Segments

On the basis of standard fit criteria and an interpretation of the different segment solutions, we chose a four-segment solution in our latent class model (Wedel and Kamakura 1999). Table 3 shows the average scores of the four segments on the two dimensions of purchase behavior with respect to labels[5].

Table 3 around here

Almost 60% of our sample falls into segment 1. These respondents spend less than average on health-labeled products and hardly buy any products with a sustainable claim. We classify this segment as conventional product buyers, though we note that they have tendency to buy some products with health labels. Segment 2 contains approximately 30% of respondents. These respondents spend more than the average on products with health labels without spending much on products with sustainable claims. Therefore, we interpret this segment as the health label segment. Segment 3, containing approximately 10% of our sample, spends more than average on both products with health and sustainable labels. Therefore, we define this segment as the health and sustainable label segment. Finally, segment 4 contains consumers who have more pronounced sustainable purchasing patterns than segment 3. These respondents spend

[5] The three- and five-segment solutions are available from the authors on request. In the three-segment solution, we combine segments 3 and 4 into a single segment, though some of the co-variates become less significant. For example, price-consciousness is no longer a significant predictor of segment membership.

approximately 22% of their household budget on products with organic and fair-trade labels and therefore constitute the sustainable segment. The health label purchases of this segment are slightly below average. This segment is made up of only 4% of the respondents.

Describing the Segments

Table 4 displays the coefficients associated with the covariates and their level of significance. These coefficients denote the impact of a covariate on segment membership. In terms of interpretability, a (large) positive coefficient means that consumers who score high on this covariate are more likely to be a member of the segment. A (large absolute) negative value implies that consumers with high levels of this covariate are less likely to be assigned to the segment. The parameters show the effect of the considered variable when controlling for the effects of all other variables included.

- Table 4 around here -

CFC, biospheric values, and price consciousness are significant predictors of segment membership. CFC negatively affects the likelihood of being assigned to segments 1 and 2 and increases the likelihood of being a member of segments 3 and 4. The largest negative coefficient is associated with segment 1, which contains conventional product consumers. A smaller negative coefficient is associated with segment 2, the health label consumers. This implies that these consumers have a somewhat higher CFC than segment 1 but a lower CFC than segments 3 and 4. While CFC drives combined health and sustainable behavior (segment 3), the strongest positive association between CFC and segment membership occurs for segment 4. A high CFC is thus strongly associated with sustainable behavior, though it does not consistently lead to healthy behavior.

Price-conscious consumers are more likely to be members of segments 1 (conventional products) or 3 (products with health and sustainable labels). Importantly, price consciousness has a strong negative association with membership in the sustainable segment 4. We also find a relatively small negative association between price consciousness and membership of the health label segment 2. Thus, in general, our results suggest that the sustainable segment in particular is less price conscious. Health motivation and quality consciousness do not significantly predict segment membership. Thus, the four segments do not differ on these two descriptor variables.

Of the included values, only biospheric values have a significant effect on segment membership. The effect is negative for segments 1 and 2 and positive for segments 3 and 4. Thus, biospheric values positively predict membership of segments 3 and 4, which contain consumers with sustainable purchasing patterns. The strongest positive association between biospheric values and segment membership occurs for segment 4, which contains the heavy purchasers of sustainable products. Biospheric values are strongly negatively related to membership of the health label segment. We find no significant effects for altruistic and egoistic values.

Gender, education, and household size significantly affect segment membership, especially those in segment 3. A descriptive analysis reveals that almost all members of this segment are women (97%). Higher education negatively affects the likelihood of being assigned to segment 1 and strongly predicts membership of the sustainable segment 4. Larger households are less likely to be members of segments 3 and 4, whereas a larger household size increases the likelihood of being assigned to segment 1. Members of the conventional products segment 1 are therefore more likely to have a low education and larger households. An explanation for this finding is that labeled products are typically more expensive than regular products, and this price

difference becomes more important when large quantities are purchased, such as in large households. This effect remains even when we control for price consciousness.

DISCUSSION

We analyzed actual consumer buying behavior of products with different labels and classified this into two dimensions: (1) health labels and (2) sustainable labels, including organic and fair-trade labels. The latter classification is in line with the notion that sustainable production and consumption should find a balance between profit and the planet and people (Bergmans 2006). Furthermore, consumers seem to group organic labels (planet) and fair trade (people) together, resulting in the same underlying sustainable dimension. Our results also indicate that despite some associated health consequences, organic labels are not grouped with health labels, suggesting that the sustainable connotation of organic products dominates from a consumer perspective. Our results also show that consumers consider the inter-temporal benefits and costs of these labels differently, with the strongest differences occurring between the health and sustainable labels.

We identified four segments that differ in their buying behavior of the studied labels. The largest segment is the conventional products segment. The other three segments purchase relatively more labels but with a different focus. The two relatively smaller sustainable segments are in line with observations in practice that market shares of sustainable labels are growing but still relatively low, with many consumers preferring conventional to sustainable products. Sustainable labels still seem to serve niche markets. The existence of a segment that purchases products with both sustainable and health labels suggests that these consumers also associate

health benefits with organic products, though as discussed previously, we do not find a significant effect of health motivation on segment membership.

In addition, we find only significant differences among the segments on CFC, biospheric values, and price consciousness. CFC, which is a central variable in social dilemma theory, considers the long-term consequences of choices. CFC drives sustainable behavior, suggesting that consumers consider the long-term consequences of sustainable labels. Conversely, consumers in the health label segment care less about the future consequences of their behavior, suggesting that these people mainly consider the short-term benefits of healthy choices, such as weight loss from lower calorie intake. This is in line with recent research showing that people discount health gains more than environmental gains (Hardisty and Weber 2014). The health consequences of this behavior could also be more complex, which might also be reflected in the non-significant effect of health motivation. Further research might focus on some of these findings with regard to CFC. For example, why does CFC not influence the buying behavior of health labels, despite their long-term benefits? Additional research on the underlying processes and using experimental approaches would be useful here.

Given the higher prices of labeled products, differences on price consciousness are expected. In particular, the sustainable segment is less price conscious than the other three segments; however, the effect is smaller in the health label segment. The segment buying relatively more health and organic labels is more price conscious, which is difficult to reconcile with existing theory. One explanation might be that these consumers typically buy labeled products on promotion, which might explain the findings of Bezawada and Pauwels (2013) of relative strong promotion elasticities for organic products. A specific segment might be

interested in these products, as reflected by somewhat higher CFC and biospheric values, but only want to buy these products when the price is significantly reduced.

We find no significant differences among the segments for quality consciousness or health motivation, which suggests that quality differences between labeled and conventional products are not entirely clear to consumers (van Doorn and Verhoef 2011). Product quality is also rather subjective and may be driven by personal and situational variables. For example, although the conventional products segment might view products with health labels as having lower quality, the health label segment includes other attributes (i.e., health) in its quality evaluation (Grunert 2005).

Although the findings are in the right direction, the absence of differences among segments with regard to health motivation is surprising[6]. One issue here could be the considered problems with health consequences of health labels. Consumer research has convincingly shown that consumers' consumption behavior of "light" products may actually increase rather than decrease calorie intake because of several psychological mechanisms (e.g., Wansink and Chandon 2006; Cleeren et al. 2016). Specific health labels may also have negative side effects; for example, research has shown that sugar substitutes in soft drinks have negative effects on health (Tandel 2011). Research also suggests that consumers may distrust the health claims of specific health labels and that the considered future consequences may depend on the framing of health messages (Kees 2015); as such, consumers who are very health conscious might even abstain from buying products with health labels. Another explanation could be that health

[6] In the not chosen fifth-segment solution, we find that health motivation is significant ($p = .05$). In this solution, we find two more health label segments. The first health segment has a relatively higher health motivation, though the second segment also buys significantly more health labels and has a lower-than-average health motivation. As such, we still do not find strong support that health-motivated consumers are more likely to buy health labels. However, this finding might imply that there are two health label segments: (1) a health-motivated segment and (2) a non-health-motivated segment. Further research could examine this finding in more depth.

motivation is still a rather high-level psychographic characteristic. Perhaps more focused measures of behavior, such as a dietary restraint scale centered on overweight issues, would be useful (van Strien et al. 2007). In summary, experimental research on the role of health motivation is necessary given that we would expect a link with consumer purchase behavior of health labels. For example, when does health motivation induce the buying behavior of healthy products?

We find strong differences among the segments on biospheric values. Both segments showing more sustainable behavior (i.e., 3 and 4) have higher biospheric values, reinforcing theory on these values and prior research in environmental psychology (e.g., Steg, Dreijerink, and Abrahamse 2005). We find no differences among the segments on egoistic and altruistic values. Thus, sustainable behavior is apparently not related to these behaviors. Prior research offers mixed results on the effects of altruistic values on sustainable behavioral patterns (e.g., van Doorn and Verhoef 2015). Fair-trade labels might not be sufficiently positioned in terms of their pro-social nature Altruistic values might also pertain more to the direct social environment (e.g., family, friends). These results highlight another fruitful research direction focusing on the role of altruistic values in the purchase behavior of sustainable products in general and fair-trade labels in particular. Should altruistic values be re-conceptualized? Should research, for example, treat altruism as a multi-dimensional construct to account for the distance to other people (e.g., close family vs. farmers in third-world countries)?

We cannot rule out that specific limitations of our study might have affected our results. First, we assessed aggregated purchase behavior over 29 product categories. Therefore, we do not take into account systematic differences arising from supply factors, pricing, promotions, and so on, across product categories. Second, by aggregating over time and categories, we also did

not include price as a variable. We did, however, account for potential price effects from the consumer side by including price consciousness as a driver of segment membership. From a more technical standpoint, product characteristics other than labeling could have been taken into account. Further research could aim to address these limitations.

IMPLICATIONS

This research presents clear segments in terms of the buying behavior of specific health and sustainable labels. Some implications can be derived in terms of branding sustainable products and targeting specific segments. For branding, our research shows that firms should clearly communicate the claim to consumers. Use of labels (i.e., UTZ certified) not prominently displayed does not clearly distinguish these products from other products. For targeting, sustainable brands could advertise to specific consumer segments that vary considerably from average consumers in terms biospheric value orientation, CFC, price consciousness, and socio-demographic variables (i.e. higher education). Notably, organic and fair-trade labels can target the same consumers and also refer to the same underlying values in their communications. Importantly, our segmentation also shows that some segments are not perfectly served. Specifically, the presence of a health and sustainable segment suggests the opportunity for firms to brand health and sustainable claims simultaneously.

From a societal standpoint, policy makers should aim to stimulate sustainable consumption. For example, they could attempt to influence consumers' values and the extent to which they consider future consequences of their actions. Especially biospheric values should be made more prominent in society. The drawback of these tactics is that it is questionable whether public policy can influence these consumer characteristics.

An obvious way to increase the size of segments buying sustainable products is to decrease the price gap with conventional products. Governments could encourage the consumption of these products by lowering their value-added taxes. For example, in the automotive market, we observe strong increases in demand for energy efficient cars when taxes are decreased. Such a practice could also induce larger households to buy organic products.

No strong straightforward implications can be derived from this research to increase the segment of consumers who purchase products with health labels. The health label segment does not differ strongly from the conventional products segment in terms of attitudes, values, and demographic composition. This is likely because this segment has become relatively large, and health has become mainstream; as such, growth might be more difficult to achieve.

Table 1
Descriptive Statistics of the Studied Food Claims and Labels

		Share of Purchases of the Claims/Labels (in %)			
		Year 1		Year 2	
		Mean	Std. Deviation	Mean	Std. Deviation
Health Labels	Healthy choice label	9.32	5.91	8.93	5.62
	Light claim	1.59	2.31	1.60	2.32
	Zero fat claim	1.85	2.21	1.75	2.16
	Reduced fat claim	0.70	1.51	0.70	1.46
	Nutrition/health claim	3.04	3.06	3.26	3.27
Sustainable Labels	Organic label	1.31	4.99	1.34	5.06
	MSC label	0.17	0.38	0.21	0.42
	Fair-trade label	0.11	0.57	0.14	0.61
	UTZ-certified label	0.44	1.07	0.49	1.16
	Free range eggs	0.06	0.25	0.08	0.33
N		4023		4412	

Table 2

Results of the Exploratory Factor Analyses

	Year 1		Year 2	
	Dimension		Dimension	
	1	2	1	2
Healthy choice label	**.74**	.05	**.74**	.06
Light claim	**.48**	-.33	**.48**	-.28
Zero fat claim	**.48**	-.13	**.49**	-.14
Reduced fat claim	**.60**	-.09	**.59**	-.10
Nutrition/health claim	**.69**	-.17	**.70**	-.10
Organic Label	.15	**.81**	.11	**.82**
MSC label	-.06	-.11	-.07	-.11
Fair-trade label	.14	**.65**	.09	**.67**
UTZ-certified label	.09	.01	.08	.03
Free range eggs	.18	**.72**	.17	**.70**
N	4023		4412	

Notes: Bold indicates highest factor loadings.

Table 3

Profile of the Segments

	Segment				Sample average	N
	1	2	3	4		
Segment size	57%	29%	10%	4%		
% of the household budget spent on health claims in year 1	11.30	16.61	15.09	13.48	13.32	972
% of the household budget spent on sustainable claims in year 1	.15	.60	3.11	20.34	1.33	972
% of the household budget spent on health claims in year 2	9.53	20.67	12.39	15.19	13.26	839
% of the household budget spent on sustainable claims in year 2	.31	.37	1.98	16.14	1.50	839

Table 4

Parameter Estimates of the Covariates to Describe the Segments

Covariates					
	Segment 1	Segment 2	Segment 3	Segment 4	p-value
	Conventional Products	Health label	Sustainable & health label	Sustainable	
Intercept	3.15	2.90	-1.69	-4.36	.01
CFC	**-.23**	**-.17**	**.16**	**.24**	**.02**
Altruistic values	.15	.14	-.17	-.11	.17
Biospheric values	**-.39**	**-.39**	**.12**	**.66**	**.00**
Egoistic values	.08	.13	-.00	-.20	.30
Health motivation	-.05	.15	-.11	.01	.35
Quality consciousness	.02	-.09	.07	.01	.94
Price consciousness	.37	-.09	.27	-.54	.01
Age	.04	-.01	.05	-.08	.57
Gender: Female	**-.30**	**-.43**	**.72**	**.01**	**.02**
Income	-.01	.01	-.00	.01	.92
Education	**-.59**	**-.10**	**-.03**	**.71**	**.00**
Household size	**.41**	**.10**	**-.19**	**-.32**	**.00**

N = 972.

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APPENDIX A: MEASURES

Consideration of Future Consequences (Strathman et al. 1994) (α wave (1;2) = .63;.72; Average 4.55)
(7-point agree/disagree scale) I consider how things might be in the future and try to influence those things with my day to day behavior.

- I only act to satisfy immediate concerns, figuring the future will take care of itself.
- My behavior is only influenced by the immediate (i.e., a matter of days or weeks) outcomes of my actions.
- I generally ignore warnings about possible future problems because I think the problems will be resolved.
- I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time.
- I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a later date.

Health Motivation (Preventive Orientation) (Moorman 1990) (α = .77, Average 4.35) (7-point agree/disagree scale)

- I try to protect myself against health hazards I hear about.
- I am concerned about health hazards and try to take action to prevent them.
- I try to prevent health problems before I feel any symptoms.

Quality Consciousness (Ailawadi, Pauwels, and Steenkamp 2008) (α = .79; Average 3.45) (5-point agree/disagree scale)

- I always strive for the best quality.
- Quality is decisive for me while buying a product.
- Sometimes I save money on groceries by buying products of lower quality. (reversed)

Price Consciousness (Ailawadi, Pauwels, and Steenkamp 2008) (α = .79; Average 4.38)
(5-point agree/disagree scale)

- For me, price is decisive when I am buying a product.
- Price is important to me when I choose a product.

Biospheric Values (Steg, Dreijerink, & Abrahamse 2005) (α wave (1;2) = .88;.87; Average 4.38)

- Respecting the earth: live in harmony with other species
- Unity with nature: fitting into nature
- Protecting the environment: preserving nature
- Preventing pollution: protecting natural sources

Altruistic Values (Steg, Dreijerink, & Abrahamse 2005) (α wave (1;2) = .81;.81; Average 4.99)

- Equality: equal opportunity for all
- Social justice: correcting injustice, care for the weak
- Helpful: working for the welfare of others
- A world at peace: free of war and conflict

Egoistic Values (Steg, Dreijerink, & Abrahamse 2005) (α wave (1;2) = .77;.76; Average 2.11)

- Wealth: material possessions, money
- Social power: control over others, dominance
- Authority: the right to lead or command
- Influential: having an impact on people and events
- Ambitious: hard-working, ambitious, striving

(All values measured on a scale ranging from 0 (‘not at all important’) to 7 (‘of supreme importance’).

Appendix B:

Descriptive statistics of the households in study

Age		**Education**	
≥29	6.8 %	No H.S. diploma	1.1 %
30-44	33.6 %	H.S. or trade school	27.8 %
45-64	47.9 %	Associate's/BA/BS	36.1 %
≥65	11.8%	Graduate school	35.0 %
Income (in €)		**Household size**	
≤1100	8.6 %	1 person	21.8 %
1101-2100	46.3 %	2 persons	35.0 %
2101-3100	31.7 %	3 persons	16.4 %
3101-4100	11.5 %	4 persons	17.8 %
≥4101	1.8 %	5 or more persons	9.0 %
N		1,353	

APPENDIX C: Correlations between Attitudinal Measures and SOW of Health and Sustainable Claims

		(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20
(11) CFC	Corr.	1.00									
	N	972									
(12) Altruistic values	Corr.	-.01	1.00								
	N	972	972								
(13) Biospheric values	Corr.	.05	.62**	1.00							
	N	972	972	972							
(14) Egoistic values	Corr.	-.02	.07*	.11**	1.00						
	N	972	972	972	972						
(15) Health motivation	Corr.	.07*	.23**	.29**	.13**	1.00					
	N	972	972	972	972	972					
(16) Price consciousness	Corr.	-.03	.02	-.02	-.04	-.02	1.00				
	N	972	972	972	972	972	972				
(17) Quality consciousness	Corr.	-.112**	.15**	.14**	.14**	.15**	-.39**	1.00			
	N	972	972	972	972	972	972	972			
(18) SOW of health claims in yr. 1	Corr.	.07*	.02	-.02	.05	.10**	-.13**	.06	1.00		
	N	972	972	972	972	972	972	972	972		
(19) SOW of sustainable claims in yr. 1	Corr.	.11**	.05	.17**	-.04	.07*	-.10**	.03	-.03	1.00	
	N	972	972	972	972	839	839	839	972	972	
(20) SOW of health claims in yr. 2	Corr.	.04	.02	-.06	.05	.09*	-.16**	.08*	.82***	.00	1
	N	839	839	839	839	839	839	839	839	839	8
(21) SOW of sustainable claims in yr. 2	Corr.	.10**	.03	.17**	-.04	.08*	-.12*	.07	.07	.94***	
	N	839	839	839	839	839	839	839	839	839	8

** Significant at 1% level.
* Significant at 5% level.